AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remain(s) under examination in the application is presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or fewer characters; and 2. added matter is shown by underlining.

1-19. (Cancelled).

20. (Previously Presented) A method of producing curved cuts in a transparent material, by generating optical breakthroughs in the material by application of laser radiation focused into the material, comprising the steps of:

three-dimensionally shifting the focal point to produce the cut by a series of optical breakthroughs;

shifting the focal point at a maximum speed which is lower in a first spatial direction than in two other spatial directions, the first spatial direction being parallel to an axis along which the application of laser radiation is made; and

guiding the focal point such that it follows, with respect to the two other spatial directions, contour lines of the cut, the contour lines being located in planes that are substantially perpendicular to the first spatial direction.

21. (Previously Presented) The method as claimed in Claim 20, wherein the transparent material is the cornea.

22. (Previously Presented) The method as claimed in Claim 20, wherein the contour lines are substantially elliptical.

23. (Previously Presented) The method as claimed in Claim 22, wherein the substantially elliptical contour lines have an ellipticity of between about 1.0 and about 1.2.

24. (Previously Presented) The method as claimed in Claim 20 further comprising the step of selecting the distances between the contour lines in the first spatial direction such that the average distances between adjacent contour lines are substantially constant.

25. (Previously Presented) The method as claimed in Claim 24 further comprising the step of selecting the distances between the contour lines in the first spatial direction such that the average distances between adjacent contour lines are maintained constant within a tolerance of plus or minus about ten percent.

26. (Previously Presented) The method as claimed in Claim 20, further comprising the steps of moving the focal point for each contour line, substantially completely along the contour lines except for a residual portion of the contour line, and making a transition to the next contour line in the residual portion by shifting the focal point in the first spatial direction.

27. (Previously Presented) The method as claimed in Claim 20, further comprising the steps of obtaining the contour lines for higher orders of curvature of the cut by sectioning a curved cut surface, which is corrected with regard to higher orders of curvature, with planes perpendicular to the first spatial direction.

28. (Previously Presented) The method as claimed in Claim 27, further comprising the steps of modifying the shift in the first spatial direction according to the influence of the higher orders of curvature, while shifting the focal point in the two other spatial directions according to the contour lines which are assigned to the corrected cut surface without higher orders of curvature.

29. (Previously Presented) The method as claimed in Claim 20, further comprising the step of placing a contact glass onto the material, said contact glass imparting a particular shape to the material, and considering said shape for the contour lines.

30. (Previously Presented) The method as claimed in Claim 20, further comprising the steps of deactivating the laser radiation with respect to generating optical breakthroughs when the contour line extends outside a desired region of the material in which the cut is to be produced,

31. (Previously Presented) The method as claimed in Claim 30 wherein said desired region is substantially circular as viewed along the first spatial direction.

32. (Previously Presented) An apparatus for producing curved cuts in a transparent material, said apparatus comprising:

a laser radiation source which focuses laser radiation into the material at a focal point and causes optical breakthroughs therein;

a scanning unit which three-dimensionally shifts the focal point, wherein the scanning unit comprises adjustable optics for shifting the focal point in one spatial direction which is parallel to a direction in which the laser radiation is applied;

a control unit which controls the scanning unit, to form the cut surface by sequential arrangement of the optical breakthroughs in the material; and

wherein the control unit controls the scanning unit such that the focal point is guided in two other spatial directions on contour lines of the cut, the contour lines being located in planes that are substantially perpendicular to the first spatial direction.

33. (Previously Presented) The apparatus as claimed in Claim 32, wherein the transparent material is the cornea.

34. (Previously Presented) The apparatus as claimed in Claim 32, wherein the adjustable optics comprise a telescope arrangement.

35. (Previously Presented) The apparatus as claimed in Claim 32, wherein the scanning unit comprises two tilting mirrors with crossed axes of rotation to effect the focus shift in the two other spatial directions.

36. (Previously Presented) The apparatus as claimed in Claim 32, wherein the contour lines are substantially elliptical.

37. (Previously Presented) The apparatus as claimed in Claim 36, wherein the substantially elliptical contour lines have an ellipticity of between about 1.0 and about 1.2.

38. (Previously Presented) The apparatus as claimed in Claim 32, wherein the control unit selects the distances between the contour lines in the first spatial direction such that the average distances between adjacent contour lines are substantially constant

39. (Previously Presented) The apparatus as claimed in Claim 32, wherein the control unit selects the distances between the contour lines in the first spatial direction such that the average distances between adjacent contour lines are constant within a tolerance of plus or minus about ten percent.

40. (Previously Presented) The apparatus as claimed in Claim 32, wherein for each contour line, the control unit moves the focal point substantially fully along the contour line except for a residual portion, and effects a transition to the next contour line in the residual portion by shifting the focal point in the first spatial direction.

41. (Previously Presented) The apparatus as claimed in Claim 32, wherein, for higher orders of curvature of the cut, the control unit determines the contour lines by sectioning a curved cut surface, which is corrected with regard to higher orders of curvature, with planes perpendicular to the first spatial direction.

42. (Previously Presented) The apparatus as claimed in Claim 41, wherein the shift in the first spatial direction is modified according to the influence of the higher orders of curvature, while the focal point is shifted in the two other spatial directions according to the contour lines which are assigned to the corrected cut surface without higher orders of curvature.

43. (Previously Presented) The apparatus as claimed in Claim 32, wherein a particular shape is imparted to the surface of the material by a contact glass, and wherein the control unit considers said particular shape in the contour lines.

44. (Previously Presented) The apparatus as claimed in Claim 32, wherein the control unit deactivates the laser radiation with respect to generating optical breakthroughs, when the contour line extends outside a desired region of the material in which the cut is to be produced.

45. (Previously Presented) The apparatus as claimed in Claim 44, wherein the desired region is substantially circular as viewed along the first spatial direction.

46. (Previously Presented) The apparatus as claimed in Claim 32, further comprising a unit for intermediate deactivation or attenuation of the laser beam.